VETCT

Teleradiology | Teleconsulting | Education

IT'S YOUR CASE

Species: Canine Breed: Boston Terrier Sex: Male Entire Age: 10 years

Clinical History:

He has an acute history of collapsing and subsequent heavy breathing that began when he was outside (in cold weather). He has pale mucous membranes
He was normal last night and earlier today.

Anatomic regions: Thorax, Abdomen

Details of study and technical comments: Left lateral, right lateral and ventrodorsal views of the thorax and are provided. Both lateral thoracic images are expiratory in timing of image acquisition which artificially increases the opacity in the lungs and may obscure small nodules or mild pathology or artifact surely mimic true pathology.

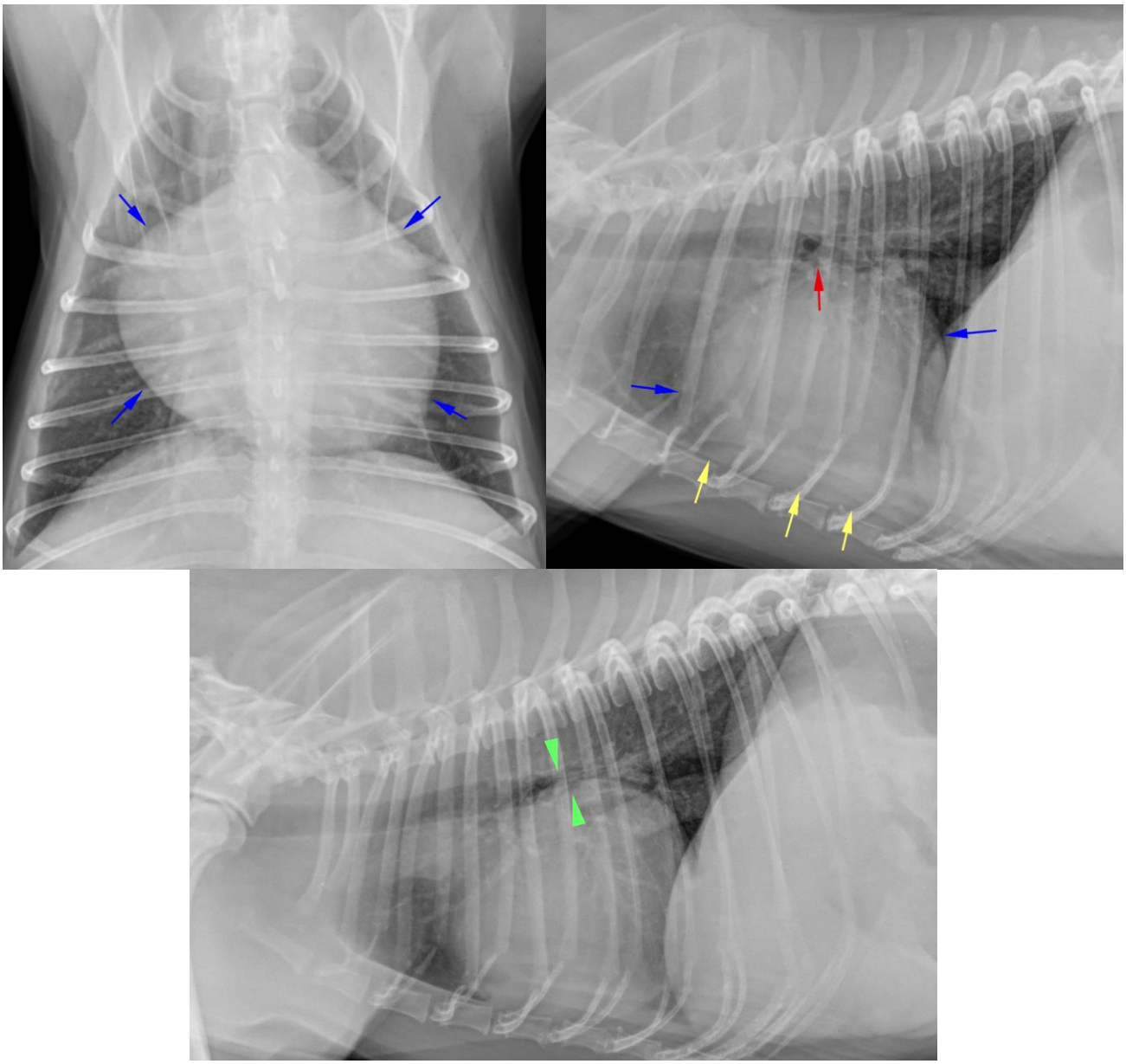
Diagnostic interpretation:

THORAX:

The cardiac silhouette is moderately increased in width (blue arrows) on all views with rounded margins and a generally round shape on the ventrodorsal view. The cardiac silhouette is also increased in height resulting in dorsal deviation of the terminal trachea (red arrow). There is a generalised increase sternal contact of the cardiac silhouette (yellow arrows) and subjective increased proportion of right: left silhouette on both lateral views. The pulmonary vessels are normal. The caudal vena cava is increased in diameter which may be accentuated by expiratory timing of image acquisition.

The trachea and carina are normal. There is moderate narrowing of the caudal mainstem bronchi on the left lateral view (green circle). Mild increased opacity is noted in the region of the caudal dorsal lungs of both lateral views consistent with imaging artifact due to timing of image acquisition and atelectasis. A mild diffuse bronchial pulmonary pattern is present throughout all lung lobes. There are no pulmonary nodules or masses identified.

The pleural space is otherwise normal. There is no evidence of thoracic lymphadenopathy. The diaphragm and surrounding musculoskeletal structures are unremarkable. The cranial abdomen is unremarkable.



Conclusions:

- Generalised cardiomegaly with primarily generally round shape and equivocal right-sided enlargement.
    - Differentials include low volume pericardial effusion, or less typical heart disease such dilated cardiomyopathy or arrhythmogenic right ventricular cardiomyopathy.
- Normal variation in diameter of caudal mainstem bronchi during expiratory timing, versus static or dynamic compression secondary to cardiomegaly.
- Diffuse bronchial pulmonary pattern may represent a combination benign age-related fibrosis and chronic bronchitis (infectious or allergic).

Additional comments:

Collapsing events can be neurologic (i.e. seizure) or cardiogenic. The primary finding of that could relate to the historical collapsing episode is the enlarged and rounded cardiac silhouette. Cardiomegaly is nonspecific and most often in small dogs of advanced age, mitral valve insufficiency is most common. This is accompanied by left atrial dilation and left ventricular enlargement as the disease progresses. There is a noticeable lack of left sided cardiomegaly. Thus, other differentials merit consideration. The cardiac silhouette is comprised of the heart, the pericardium and a small volume of pericardial fat. With many diseases (including mitral valve disease) the cardiac silhouette still maintains its classic shape.

It is important to note that the cardiac shape is rounded. This can suggest distention of the pericardial sac with a small volume of fluid therefore distorting the shape with relatively mild enlargement of the cardiac silhouette. When physiologically substantial, then the lower pressure system of right side may not adequately fill in diastole to maintain the output of the right ventricle. This creates a domino effect to the left side. Reduced preload of the left can diminish adequate cardiac output. This constellation is termed tamponade and often results in syncope.

Alternative consideration can be given to dilated or arrhythmogenic cardiomyopathy. In the process of exploring these possibilities, an electrocardiogram (ECG/EKG) and echocardiogram will be performed. Abnormalities that may be observers in an EKG of patients in tamponade will include a normal qRS complex that alternate in height; this is termed electrical alternans. Echocardiogram will identify anechoic fluid surrounding the heart. If the volume of fluid is significant enough to compete with the heart for the finite space within the pericardial sac, there may be diminished motion of the muscular walls when tamponade is present.

Causes of pericardial effusion are variable. They can be malignant masses (associated with the heart base or right atrium), associated with chronic (and often severe) heart disease or idiopathic. This would necessitate sampling of the fluid for cytology once the risk- benefit ratio has been assessed.